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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/766,033	01/29/2004	Soichi Shibata	43888-292	2438
20277	7590	09/20/2006	EXAMINER KALAFUT, STEPHEN J	
MCDERMOTT WILL & EMERY LLP 600 13TH STREET, N.W. WASHINGTON, DC 20005-3096			ART UNIT	PAPER NUMBER

1745

DATE MAILED: 09/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/766,033

Applicant(s)

SHIBATA ET AL.

Examiner

Stephen J. Kalafut

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-9, 12 and 13 is/are rejected.
- 7) ☒ Claim(s) 10 and 11 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date (2 dates).
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____.

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Claims 2 and 3 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. These claims recite the use of the present separator as an electrode in an electrolytic test, but are drawn to a fuel cell that contains the separator as an article. How the testing method limits the characteristics of the separator itself is unclear.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Saito *et al.* (US 2002/0015876) in view of Nakamura *et al.* (US 6,451,469).

Saito *et al.*, cited by applicants, disclose a fuel cell that includes a hydrogen ion conductive polymer membrane (2) sandwiched between a pair of electrodes (3), and a pair of conductive separators (1) with gas flow channels (4) that feed fuel and oxidant to respective electrodes (figure 1). The composition of the separator is designed to minimize the elution of ions and organic matter therefrom (section 0023), and includes a conductive material and a binder (sections 0025 through 0028), the amount of binder selected to minimize elution (section 0028). Thus, the present recitation of elution characteristics would represent an optimization of the teachings of Saito *et al.* The separator undergoes being exposed to water at 90 °C for 500 hours, which would meet the first treatment recited in claim 12. The various recited treatments

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are treated under product-by-process practice, MPEP 2113, and until shown otherwise, are not seen as conferring any particular structural characteristics to the final product, which would be indistinguishable from the treated separator of Saito *et al.* Recitations of using the separator as an electrolytic anode or cathode are not given weight because these claims are drawn to the fuel cell article, while these details are to a testing procedure. These claims differ by reciting gaskets between the outer periphery of the membrane and each separator, thus surrounding each electrode. Nakamura *et al.* disclose a fuel cell that includes gaskets (9) located between the outer periphery of a membrane (2) and each of two separators (5, 6) that provide gas sealing (column 3, lines 27-30). Because Saito *et al.* also desire gas sealing (section 0003), it would be obvious to construct the fuel cell of Saito *et al.* in the way shown by Nakamura *et al.*, with gaskets between the outer periphery of the electrolyte membrane and the separators.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Saito *et al.* in view of Nakamura *et al.* as applied to claim 1 above, and further in view of Ohara *et al.* (US 6,444,346).

This claim differs from the above combination by reciting that the gasket and separator are integrated into one piece. Ohara *et al.* discloses a fuel cell separator and gasket integrally formed into one piece (column 2, lines 50-58). This arrangement reduces the amounts of time, labor and cost needed to construct the fuel cell stack (column 3, lines 18-22). For this reason, it would be obvious to construct each separator of Saito *et al.* and the respective gasket disclosed by Nakamura *et al.* as a single piece as taught by Ohara *et al.*

Claims 6, 8, 9 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Saito *et al.* in view of Nakamura *et al.* as applied to claim 1 above, and further in view of Gyoten *et al.* (EP 1,227,531), cited by applicants.

While Saito *et al.* disclose carbon (section 0027) as the conductive material for their separator, the above combination does not teach a trapping agent as part of the separator. Gyoten *et al.* teach the incorporation of polymers containing basic radicals into a fuel cell separator (sections 0025 and 0026). This would help prevent the leaching of metal ions, which would be positive, out of a metal substrate (section 0027). Because Saito *et al.* also include metals as conductive materials (sections 0026 and 0032), it would be obvious to include in the separator of Saito *et al.* the polymers that contain basic radicals disclosed by Gyoten *et al.* Regarding claim 13, Saito *et al.* disclose compression molding of separator material as a method of forming their separators (sections 0033 and 0048).

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Saito *et al.* in view of Nakamura *et al.* as applied to claim 1 above, and further in view of Spencer *et al.* (WO 00/10216), cited by applicants.

The above combination does not teach a trapping agent as part of the gasket. Spencer *et al.* disclose a fuel cell gasket (1) that either includes an ionomer (page 8, lines 26-29) or includes a sub-gasket (4) comprising an ionomer (page 9, lines 17-19). The preferred ionomer includes the cation-trapping group SO_3^- (page 9, lines 8-9). This gasket, optionally with the sub-gasket, forms a fluid tight seal, minimizes the amount of expensive ionomer used therein, prevents mechanical failure of the membrane electrode assembly, and provides electrical insulation (page

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6, lines 6-15). For these reasons, it would be obvious to use the gasket, optionally with the sub-gasket, each with an ionomer, disclosed by Spencer *et al.* as the gasket located in the place shown by Nakamura *et al.* in the fuel cell of Saito *et al.*

Claims 10 and 11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The prior art, cited either herein or by applicants, does not disclose a fuel cell with a separator that includes a coating of a trapping agent.

The disclosure is objected to because of the following informalities: The numeral 131 (without a letter) in figure 11 is not found in the specification. In section 0230, line 5, after "500", there is a square. Likewise, in section 0231, line 5, after "80", there is a square. Appropriate correction is required.

The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen J. Kalafut whose telephone number is 571-272-1286. The examiner can normally be reached on Mon-Fri 8:00 am-4:30 pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

sjk


STEPHEN A. SMITH
PRIMARY EXAMINER
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